Nitric Oxide-Releasing Polymers for Wound Healing and Related Biomedical Applications

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Keywords: Therapeutic, wound healing, dermatological conditions, nitric oxide, polyvinyl pyrrolidone (povidone), bioabsorption

Summary: The National Cancer Institute, Chemical Biology Laboratory is seeking parties interested in collaborative research to co-develop NO-releasing polymers for commercial applications in wound healing.

Technology:
A number of factors can play a detrimental role in the process of wound healing such as poor nutritional status, smoking, various drugs, cancer, and diabetes. Wound healing impairment is a challenging clinical problem with no efficacious treatments currently available. Nitric oxide (NO) has been shown to play a role in the process of wound healing by promoting both the proliferative and remodeling phases of healing.

The present invention is a polyvinylpyrrolidone (PVP)-based polymer which is capable of releasing NO at therapeutic levels over a prolonged period of time when applied to a moist wound. The polymers can also be incorporated into wound dressing and bandages for enhanced wound healing compared to the bandage alone. These wound dressings and bandages may be useful in the treatment of wounds, various infections and dermatological conditions, and for follow-up to cancer treatments generating wounds. Polyvinylpyrrolidone (PVP; povidone) has already been approved for a number of clinical applications such as betadine (povidone-iodine) topical antiseptics.

Potential Commercial Applications:
- Controlled release of NO for potential use in wound healing, infection control, dermatological conditions or stomach irritation by non-steroidal anti-inflammatory drugs (NSAIDs)

Competitive Advantages:
- The base polymer, PVP, has already been approved for clinical applications.
- The slow release of nitric oxide over a prolonged time period makes this technology attractive for its potential use in a controlled release patch or bandage.

Development Stage: Pre-clinical, *in vitro* and *in vivo* data available

Patent Status: US Provisional Application No. 61/672,486 filed 17 July 2012.

Related technology: NIH Ref. # E-188-2004 U.S. Patent No. 7,968,664 issued 28 June 2011

Contact: Please submit an information request form at http://techtransfer.cancer.gov or contact John Hewes, Ph.D., (301) 435-3121, hewesj@mail.nih.gov.

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